## Instruction Manual

# HI 3831T
# Total Chlorine
# Test Kit

www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Product.

Please read the instructions carefully before using the chemical test kit. It will provide you with the necessary information for correct use of the kit.

Remove the chemical test kit from the packing material and examine it carefully to make sure that no damage has occurred during shipping. If there is any noticeable damage, notify your Dealer or the nearest Hanna office immediately.

Each kit is supplied with:

- 1 Color Comparator Cube;
- Chlorine Reagent 1 (20 mL);
- Chlorine Reagent 2 (15 mL);
- Chlorine Reagent 3 (15 mL).

**Note:** Any damaged or defective item must be returned in its original packing materials.

## *Specifications*

| | |
|---|---|
| Range | 0.0 to 2.5 mg/L (ppm) Chlorine |
| Smallest Increment | 0.5 mg/L (ppm) Chlorine |
| Analysis Method | Colorimetric |
| Sample Size | 5 mL |
| Number of Tests | 50 (average) |
| Case Dimensions | 220x145x55 mm (8.7x5.7x2.1") |
| Shipping Weight | 205 g (7.7 oz.) |

## *Significance and Use*

In pools and drinking water supplies, chlorination serves to kill or deactivate disease-producing microorganisms. It can also improve water quality by reacting with ammonia, iron, sulfide and some organic substances. However, an excess concentration of chlorine in water can produce adverse conditions, such as formation of carcinogenic chloroform or other toxins. To maximize the purpose for chlorination and minimize any adverse effects, it is essential to monitor the chlorine levels closely.

The Hanna Chlorine Test Kit determines the Total Chlorine concentration in water via a color cube. This makes the test kit practical for field use. No iodine or bromine can be present for this test to work properly.

## *Chemical Reaction*

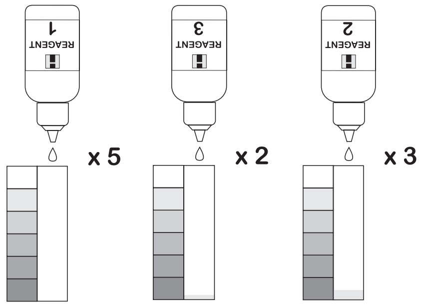
The addition of chlorine to water produces hydrochloric and hypochlorous acids. The hypochlorous acid acts as the disinfectant and bleaching agent. The formation of chloramines and nitrogen trichloride will occur if ammonia is present. These are known as bound chlorine. Total chlorine is measured by a colorimetric method.

The reaction if buffered at approx. 6.3 pH; in presence of an excessive quantity of iodide ions, the DPD (N,N-diethyl-p-phenylenediamine) is oxidized by chlorine producing a reddish color. The color intensity of the solution determines the total chlorine concentration.

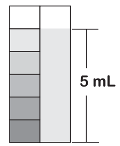
## *Instructions*

READ THE ENTIRE INSTRUCTIONS BEFORE USING THE KIT

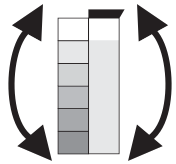
- Add 5 drops of Chlorine Reagent 1, 2 drops of Chlorine Reagent 3 and 3 drops of Chlorine Reagent 2 to the color comparator cube.



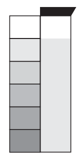

- Fill the color comparator cube with sample to the 5 mL mark.




- Replace the cap and mix by carefully swirling the cube in tight circles and inverting it several times.



- Determine which color matches the solution in the vessel and record the results in mg/L (ppm) total chlorine.



### BOUND CHLORINE

The concentration of bound chlorine in the sample is determined by subtracting the Free Chlorine (HI 3831F) result from the Total Chlorine result (HI 3831T).

## *References*

Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998.

## *Accessories*

**HI 3831T-050** replacement kit (50 tests)
**HI 3831-99** color comparator cube for chlorine kit
**HI 740032P** cap for 20 ml plastic beaker (10 pcs)
**HI 740037P** 20 ml plastic beaker (10 pcs)

## *Safety Data Sheets*

The chemicals contained in this kit may be hazardous if improperly handled. Read the relevant Safety Data Sheet before performing this test.